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Determinants of Rural Exodus and Its Implications on Food Security in Nkambe Central, North West Region of Cameroon

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ABSTRACT

This paper aimed to assess the determinants and implications of rural exodus on food security in Nkambe Central. The specific objectives were to analyze the determinants of rural exodus and to determine the effect of rural exodus on food security in Nkambe Central. The target population was households in Nkambe Central whose at least one member had migrated to the urban areas. We adopted a stratified sampling technique with a sample size of 204 respondents. Data was collected through a structured questionnaire. Data was analyzed using an ordinary least square regression analysis. Findings from the determinants of rural exodus revealed that age, marital status, religion, availability of higher education facilities, and job opportunities in urban areas were found to have a positive influence on rural exodus. Also, push factors such as political instability, natural disasters, and lack of social and health amenities were positively associated with rural exodus. Regarding the effects of rural exodus on food security, the study found that rural exodus negatively affects food security in Nkambe Central. It was recommended that; investment should be made in irrigation systems to improve agricultural productivity, and the government should provide social amenities in Nkambe such as good hospitals, and higher institutions to reduce rural exodus and boost food security in Nkambe.

Keywords*:* Rural Exodus; Food Security; Pull factors; Push Factors

INTRODUCTION

The rural exodus phenomenon is a global issue leading to increased urbanization, with the UN predicting that 66% of the world's population will reside in urban areas by 2050 (UN 2018). Approximately 690 million people experience food insecurity globally in 2019. Poverty, conflicts, natural disasters, and climate change are the main causes of this problem. Food insecurity has been made worse by the COVID-19 epidemic, whose containment procedures and restrictions caused food supply chains to be disrupted (Shillie et al., 2023), and the Ukrainian conflict. Furthermore, by the end of 2015, 247 million rural migrants were living in urban China as a result of rural-to-urban migration, which had a big impact on food security and demand. Migration is a survival strategy for the poor, especially those living in rural areas, and this connection between food security and migration is highlighted by academic literature and international agencies (Ajaero and Onokala, 2013). Additionally, FAO reported that since 2010, food security has visibly worsened in many parts of Africa, affecting over 243 million people with undernourishment.

Given the present rate of global population growth, which is 77 billion people, it is predicted that by 2050 there will be 9.7 billion people on the planet (Hall 2017). It is projected that only sub-Saharan Africa will account for 1.05 billion of this phenomenon's population, making it the world's most populous region by 2100 with an estimated 3.78 billion people (United Nations, 2019). The number of undernourished or hungry people has increased to 815 million, or 11% of the world's population, along with the global population growth (FAO, 2017). The last Conference of Parties (COP 27) in Egypt acknowledged the critical importance of preventing and eradicating hunger as well as the specific susceptibilities of food production systems to the negative effects of climate change.

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Nigeria, with 49% of its 200 million people living in urban areas, South Africa, with 66% of its 59 million people living in urban areas, Ethiopia, with 20% of its 114 million people living in urban areas, Uganda, with 24% of its 45 million people living in urban areas, and Kenya, with 28% of its 53 million people living in urban areas, are the top five African countries experiencing rural exodus and its effects on food security. Due to this tendency, agricultural productivity has decreased, which has increased food prices and shortages, especially impacting food security in Ethiopia (Mohamed, 2017). Meanwhile, in Cameroon, 60% of Cameroon's population lives in rural areas and works mostly in agriculture, which accounts for 30% of the country's GDP and 60% of its export earnings (MINADER, 2014). Despite this, since 2010, the country's urban population has grown at a rate of 4.3% annually, while the rural population has only grown by 2.1%. This has resulted in a fall in agricultural productivity and an impact on food security, as the rural exodus remains a major problem (United Nations, 2019).

Food security in rural areas is threatened by the movement of people from rural to urban areas since it reduces the number of farmers and agricultural workers in those areas (Olimova et al., 2010). Remittances from migrants can increase the income of the households they leave behind, which may reduce food insecurity (Azizi, 2018). However, they also cause labor shortages, which primarily affect women and impede agricultural productivity, raising the question of how rural exodus affects food security overall (Radel, 2010). While migration lowers the amount of labor available, possibly impeding long-term food security, household agricultural productivity and income, including remittances, which can be used to purchase imported food, also influence food security (Adams and Page, 2005; Karamba et al., 2010). Furthermore, research indicates that remittances are frequently used for non-agricultural purposes, which results in the underuse of arable land and an increased dependency on imported food (Sunam & Adhikari, 2016).

Food insecurity is a result of the rural exodus in Cameroon's Nkambe Central Subdivision. The World Food Programme estimates that the North West Region, including Nkambe, has an overall food insecurity rate of about 13.5%, higher than the country's average of 10.5% (WFP, 2020). Young people's departure from the area has led to a depopulation of the countryside, which has decreased agricultural productivity and output. As a result, households in Nkambe are becoming more dependent on market purchases for their food needs, which are prone to fluctuating prices (WFP, 2020). Moreover, migration is causing a loss of knowledge and expertise necessary for sustainable agriculture, which is impeding productivity and innovation in the agricultural industry. To address this problem and enhance food security in rural areas, it is essential to comprehend the causes and consequences of rural migration in this particular location. To improve policy and programmatic actions that support sustainable agriculture and address food security concerns, this study aims to shed light on the factors driving rural exodus and its impact on food security in Nkambe Central Subdivision (WFP, 2020). Since little research has been done on how rural exodus affects food security in rural areas, especially in Cameroon; this paper also seeks to bridge this gap.

LITERATURE REVIEW

The concept of rural exodus refers to the phenomenon where a significant number of people abandon rural areas and migrate to urban areas in search of better economic opportunities, improved living standards, and access to essential services. This trend is often driven by factors such as declining agricultural productivity, lack of employment opportunities, inadequate social amenities, and poor infrastructure (Ellis, 2000)

According to Chege (2016) and Renzaho and Mellor (2010), food security has a direct impact on nutritional outcomes and general health, making it essential for people's productivity and well-being. The 2009 World Summit on Food Security added stability as a fourth dimension to the widely accepted definition of food security, which is stated in the FAO annual report on food security. This definition emphasizes the importance of physical, social, and economic access to sufficient, safe, and nutritious food for an active and healthy life (FAO, 2002, 2009). According to Article 25 of the Universal Declaration of Human Rights, the idea of food security is acknowledged as a fundamental human right.

As noted by Barret (2010), universal metrics for gauging food security are still difficult to come by and need broad acceptance, objectivity, and consistency at all levels. According to Berry et al. (2015), the annual "The State of Food Insecurity in the World" report, the FAO has historically measured food security using indicators like energy deprivation and protein deficiencies, primarily through the incidence of undernourishment. There

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is still no agreement on the best indicators to fully capture the complexity of food security, despite attempts to offer a suite of indicators, including those by FAO, WFP, and IFAD (FAO, WFP, and IFAD, 2012, 2013; Berry et al., 2015).

International Scientific Symposium on Measuring Food and Nutrition Security held in Rome, Italy at the FAO headquarters from the 17th to the 19th of January 2012 gathered researchers, policymakers, experts, and stakeholders. The symposium aimed to address global issues surrounding food and nutrition security, acknowledging the prevalence of undernourishment as a key indicator with broad coverage and comparability. However, Berry et al. (2015) noted that while the prevalence of undernourishment is widely used, it alone cannot fully capture the complexity of food security dimensions, emphasizing the need for a more holistic measurement approach. In recent years, therefore the FAO, the International Fund for Agricultural Development, and the World Food Programme (FAO, WFP, and IFAD, 2012, 2013) proposed a suite of food security indicators, namely availability, accessibility, utilization, and stability in which each food security dimension is described by several indicators.

The Neo-Malthusian theory and Hierarchy of Needs theory are used to explain why people migrate to cities for food security. The Neo-Malthusian theory shows the link between food security, sustainable development, and immigration, while the Hierarchy of Needs theory, proposed by Maslow, explains how people are motivated to fulfill their needs in a specific order, from basic physiological needs to higher-level psychological needs (Jonas, 2016). Maslow's theory, highlighted by Jonas (2016), outlines five universal and hierarchical needs, including self-actualization, self-esteem, sense of belonging, safety, and physiological needs, which individuals strive to satisfy to attain stability and achieve long-term goals (Jonas, 2016; Damij et al., 2015). In the context of rural exodus and food security, Maslow's hierarchy of needs theory helps understand why people migrate and how food security influences their decision, highlighting that the desire to fulfill physiological needs like food, shelter, and healthcare can drive migration to urban areas, especially when basic needs are not met due to poverty, natural disasters, or climate change.

According to Chuo et al., (2022), who conducted a study on rural-urban migration and food insecurity in Cameroon, using quantitative research design and the Cameroon household surveys data set, it was found that there is a negative significant relationship between farm investment and food security. They recommended an inclusive agricultural program by the government to discourage further migration to urban areas. Similarly, Kulindwa & Mugisha (2019) used a multivariate binary logistic regression model to investigate the factors influencing migration from Tanzania's rural areas to its urban centers and discovered that family size, household income, distance to urban centers, access to education, and agricultural productivity were important determinants of migration. Additionally, they found a strong correlation between lower agricultural output and rural emigration, confirming the hypothesis that lower agricultural productivity was linked to a higher rate of rural-to-urban migration.

Using data from 360 households in 6 rural areas, Makate et al. (2019) conducted a micro-econometric analysis of rural-urban migration in Zimbabwe and found that higher levels of education, household income, and marital status were significant factors in migration decisions. Mitra and Chakraborty (2017) used a panel data set to analyze rural-urban dynamics in India and found that education levels, demographic factors, and disparities in urban and rural development were significant determinants of internal migration patterns, with the migration rate being lower among those with higher incomes and education levels. According to research by Awotide et al. (2017), access to loans, farm size, and education all had a major role in determining a farming household's decision to migrate from rural to urban areas in Nigeria. They found that people who could get loans were 25 percent more likely to migrate than people who couldn't.

In their mixed-methods analysis of the factors influencing rural-urban migration in Malawi, Lohmann et al. (2017) discovered that social networks and information channels are important in determining migration decisions and that rural residents' attachment to their hometowns is strengthened by their ties to their families and communities. Similar findings were made by Kaminski (2016), who studied in Poland. He discovered that familial and social ties were important indicators of rural inhabitants' intention to remain in their areas and that higher levels of these relationships were associated with lower odds of emigrating. All of these studies demonstrate how important it is for people to consider social networks, family relationships, education,

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income, and loan availability when deciding whether to migrate from rural to urban areas in different nations. Conversely, Johnson et al. (2018) discovered that in rural areas, better access to social amenities such as community centers and medical facilities reduces outmigration and boosts community satisfaction.

According to Adebayo et al. (2019), migration from rural to urban areas in sub-Saharan Africa has conflicting effects on food security. While migrants' access to food and money increases, food insecurity in rural areas worsens as a result of reduced agricultural activity. Additionally, Prastiwi et al. (2019) emphasized how Indonesian migration from rural to urban regions impacts food security from an economic and nutritional standpoint, resulting in lower agricultural productivity in rural areas and problems with food affordability in urban areas. In their discussion of the connection between rural-urban migration, food security, and climate change, Faye et al. (2019) pointed out that although migration-related problems with food security can be made worse by climate change, there is also potential for migration to improve food access and livelihoods.

Tambi et al. (2017) emphasized important variables such as mother engagement in the labor market, mother's education, family size, and father's presence in the home, coupled with the positive correlation between women in agricultural output and food security in rural Cameroon. Large-scale out-migration in Pakistan has been shown by Craven and Gartaula (2015) to make agriculture fragile and unproductive, which encourages a shift toward imported goods. They also observed social and cultural shifts brought about by this migration. Urban agriculture can assist reduce urban food insecurity, and migration with remittances plays a vital part in urban food security in rural areas. Crush (2013) found that food insecurity, social conflict, and violence promote rural-to-urban migration in African cities.

Food security and rural exodus can be correlated directly, as people move to avoid starvation, or indirectly, as households send family members to non-agricultural sectors to manage risks associated with food insecurity and inconsistent income. Exodus from rural regions can result in a loss of farming expertise, a decline in agricultural productivity, and a reduction in food production. This is particularly the case when young people move to cities in search of better prospects, which can stoke food insecurity and erode their interest in agriculture.

MATERIAL AND METHOD

Description of the study area

The research was carried out in Nkambe. Nkambe is located in Cameroon's North West Region, specifically in the Donga-Mantung Division. Misaje borders it on the west, Ako borders it on the north, Nwa Subdivisions borders it on the northeast, Ndu Subdivision borders it on the southeast, and Noni Subdivision borders it on the southwest. Its area on the surface is 487.4 km^2. The Municipality is located between longitudes 10°01.03′ and 10°01.45′ east of the Greenwich Meridian and latitudes 6°00′ and 6°01.13′ north of the equator. Nkambe Municipality is the divisional headquarters of Donga-Mantung Division and is located inside the Nkambe Central Subdivision. The division is divided into five subdivisions: Nwa, Ndu, Nkambe Central, Misaje, and Ako.

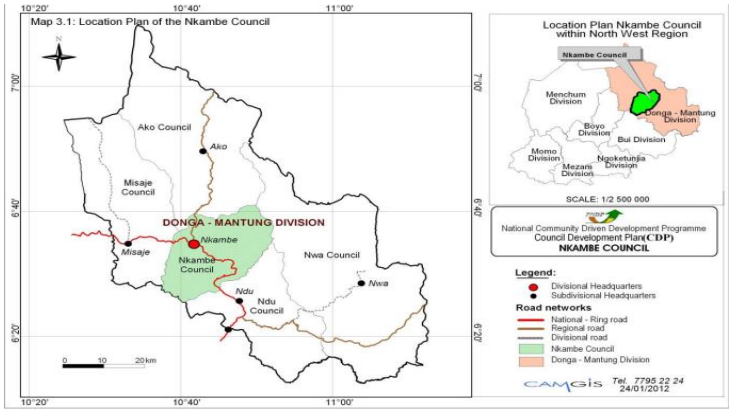

Figure 1: Map of Donga Mantung Division showing Nkambe Central Subdivision

Source: Nkambe Council Development Plan (2020)

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Research design

This study aims to assess the determinants and effects of rural exodus on food security in Nkambe central Subdivision in Donga Mantung Division of the North West region of Cameroon. Cross-sectional research was used to conduct the research. A cross-sectional survey is a type of observational study that analyses data collected from a population, or a representative subset, at a specific point in time The design was also useful not only for purposes of description but also to determine relationships between variables at the time of the study

Target Population, Sampling Technique, and Sample Size

The population is comprised of households in the Nkambe Central Sub Division whose at least one family member has left for the urban areas. The population consisted of both males and females aged 18 years and above. A stratified sampling technique was used. Nkambe Central was divided into various villages. The villages were selected randomly to ensure that every village in Nkambe had an equal chance of being included in the sample. This helped to reduce bias in the sample and increase the generalizability of the findings to the entire population of villages in Nkambe Central. The criterion used to select 10 villages from the total of 30 was based on first accessibility then population size, and level of agricultural production according to Nkambe Council Development Plan (CDP) (Nkambe CDP, 2020). These criteria were selected to ensure that the data collected would be valid and reliable in assessing the determinants and effects of rural exodus on food security in Nkambe.

To determine an appropriate sample size, the researcher utilized the Robert Slovin technique for sample determination. This formula considers factors such as the population size (N) the desired margin of error (e) and the sample size which is to be determined (n) Slovin, (1960) stated the formula as follows. $n = \frac{N}{1+N(e2)}$

The total population of the Nkambe central subdivision is estimated at 171,478, Nkambe Council Development Plan (CDP, 2020). The margin of error (e) was chosen to be 0.07. This margin of error was chosen based on previous works that studied a similar concept, another reason was the fact that collecting data with a small error term will require high cost and time-consuming.

Substituting the figures in the formula

$n = \frac{N}{1+N(e2)}$

N= 171478

e = 7% (0.07)

$n = 171478(1+171478(0.07)^2$

171478/841.2422 = 203.8

n = 203.8

By performing the calculations, a specific value for the sample size, denoted by 'n' was arrived at which, was 204. Thus, giving us the total sample for the study. Which, was further divided based on the criteria as shown in table 1 below.

Table 1: Sample Size Distribution

Criteria	Village chosen	Sample size
Population size and easily accessible	Nkambe Center	25
	Binju	22
	Tabenken	20

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	Mbot	20
	Binshua	15
Agricultural production and easily accessible	Njap	30
	Ngi	20
	Binka	20
	Kungi	20
	Njema	12
	Total	**204**

Source: Author (2024)

Data was collected through a self-administer questionnaire to 204 households in the various selected villages as distributed in Table 1.

Model Specification and Estimation Technique

The research objective aims to determine the factors influencing rural exodus in Nkambe, a suitable model specification for this analysis would be a linear regression model with rural exodus as the dependent variable, and various pull and push factors as the independent variables. This can be represented as follows:

RE = f (Push and Pull factors and control variables) …..... (1)

From equation (1) above it is considered that RE is a function of push and pull factors and control variables. Push and pull factors such as Political Instability (PI), Natural Disaster (ND), Poverty (PO), Employment Opportunities (EMPO), Health Facilities (HF), Higher Educational Facilities (HEF), and Social Amenities (SA). Then we have control variables such as Age (A), Sex (S), Education Level (EL), Religion (REL), and Marital Status (MS). This can be illustrated below as follows.

RE = f (PI, ND, PO, EMPO, HF, HEF, SA, A, S, EL, REL, MS) …..... (2)

The econometric equation for this model including the error term can thus be stated as follows.

$RE_i = B_0 + B_1PI_i + B_2ND_i + B_3PO_i + B_4EMPO_i + B_5HF_i + B_6HEF_i + B_7SA_i + B_8A_i + B_9S_i + B_{10}EL_i + B_{11}REL_i + B_{12}MS_i + Ei$…..... (3)

Where,

RE = Rural exodus (Number of household members who have migrated and living in Urban areas)

$B_{1\ to}\ B_{12}$ = represents the estimated coefficients of the variables in the model.

PI = Political Instability, ND= Natural Disasters, PO = Poverty, EMPO = Employment Opportunities, HF = Health Facilities, HEF = Higher Educational Facilities, SA = Social Amenities, A = Age, ED = Education Level, MS = Marital Status, REL = Religion, S = Sex, and Ei = Error term

The Ordinary Least Squares (OLS) regression analysis method is the appropriate technique for estimating the model since the dependent variable (Rural exodus) is captured as a continuous variable, which is the number of household members who have migrated to urban areas. OLS is a widely used statistical method that helps to estimate the parameters of a linear regression model by minimizing the sum of squared errors between the observed and predicted values. The OLS procedure provides estimates of the regression coefficients, standard

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errors, F-statistics, and R-squared values that help to determine the goodness of fit of the model. The OLS model is estimated by fitting the dependent variable to the independent variables and then examining the statistical significance and magnitude of the coefficients of the variables.

Secondly, to determine the effects of rural exodus on food security in Nkambe, a suitable model specification is shown below.

FS = f (Rural exodus, MS, G, A, REL, EMS, IL) …….…… (4)

From equation (4) above it is considered that food security is a function of Rural Exodus, Marital Status, Gender, Employment status, Religion, Income level, and Age.

The econometric equation for this model including the error term can thus be stated as follows.

$FS_i = B_0 + B_1RE_i + B_2MS_i + B_3G_i + B_4A_i + B_5REL_i + B_6EMS_i + B_7\ IL_i + Ei$ ……(5)

Where,

FS = Index of food security (food; availability, accessibility, quality, and cost indicators) gotten by average summation scores.

RE = Rural Exodus, MS = Marital Status, G = Gender, A = Age, REL = Religion, EMS = Employment Status, IL = Income Level, and Ei = Error term

The Ordinary Least Squares (OLS) regression analysis will also be employed as an analytical technique to examine the effects of rural exodus on food security in Nkambe. OLS is used because of the continuous nature of the food security index after summation scores. It is particularly suitable when examining the impact of multiple factors on an outcome of interest, which is relevant to our research objective. The OLS regression analysis will involve estimating the coefficients of the independent variables through a process of minimizing the sum of squared differences between the observed values of the dependent variable (food security) and the predicted values based on the regression equation.

RESULTS AND DISCUSSION

Summary of Descriptive Statistics for the first model

Table 2: Summary of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
RUEXODU	204	2.534314	.5000483	1	6
Age	204	3.142157	1.307194	1	5
Sex	204	1.460784	.499686	1	2
Religion	204	1.073529	.2616456	1	2
Educationa~t	204	1.862745	.7163016	1	3
Maritalsta~s	204	1.54902	.4988154	1	2
Political Instability	204	1.808824	.9508723	1	2
Natural Disaster	204	1.568627	.6510288	1	2

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Poverty	202	1.752475	.7714552	1	2
Educational Facilities	202	1.688119	.717068	1	2
Job Opportunities	204	1.887255	.7891096	1	2
Health Facilities	204	1.720588	.923352	1	2
Social Amenities	204	1.769608	.8007742	1	2

Source: Author, (2024)

Table 2 above gives a summary of the descriptive statistics of the variables used in equation one. To determine the determinants of rural exodus. It indicates that all the variables have 204 observations with some of the variables having minimum and maximum values of 1 and 2 respectively. It shows a mean value of 2.534314 for rural exodus which means that, on average, there is a moderate level of rural exodus. The standard deviation of 0.5000483 indicates a relatively low dispersion of data around the mean. The minimum value shows that households with the lowest level of rural exodus have only one member who has migrated to an urban area while those with the highest level of rural exodus have a maximum of six members who have migrated to an urban area. The minimum and maximum values of the other variables may not be very important because they are measured on a normal scale.

Regression Analysis Results for the Rural Exodus Equation

Table 3: Regression Analysis Results

RE	Coef.	Std. Err.	t	P>t
Age				
18-24	-.2265815	.1041666	-2.18	0.031
25-34	.0231047	.1198202	0.19	0.847
35-44	.0568122	.1174278	0.48	0.629
45-54	.1007261	.1497412	0.67	0.502
Sex (male=1)	.0000889	.0621154	0.00	0.999
Religion (Christian=1)	.165952	.1382986	1.20	0.232
Educational attainment				
Secondary	.0471584	.0821003	0.57	0.566
University	-.3123286	.1107204	-2.82	0.005
Marital status (Single=1)	.2174312	.0845352	2.57	0.011
Political Instability	.0608635	.0335767	1.81	0.072
Poverty	.0239581	.0529386	0.45	0.651
Natural Disaster	.1198901	.0414772	2.89	0.004
Educational Facilities	.0010813	.044945	0.02	0.981

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Job Opportunities	.0752794	.0406344	1.85	0.066
Health Facilities	-.1495415	.034411	-4.35	0.000
Social Amenities	-.0059698	.0380471	-0.16	0.875
_cons	1.846212	.2247521	8.21	0.000
Num. Obs	204			
F(16, 189)	7.89			
Prob>F	0.0000			
R-Square	0.6068			
R-Square Adj	0.5134			

Source: Author, (2024)

Table 3 above presents the results of a statistical analysis examining the relationship between various variables and the dependent variable (RE) The coefficients, standard errors, t - values, and p - values are reported for each variable. The coefficient estimates for different age groups indicate the effect of age on the dependent variable (RE). For the age group 18-24, the coefficient is -0.2265815. This suggests that being in the 18-24 age group is associated with a significant decrease in rural exodus. For the age groups 25-34, 35-44, and 45-54, the coefficients (0.0231047, 0.0568122, and 0.1007261 respectively). This means that although the coefficient is positive, indicating a positive relationship between the independent variable (age group) and the dependent variable (rural exodus) the relationship is not statistically significant. This means that in Nkambe, most individuals start migrating to urban areas when they are above 25 years of Age.

The coefficient for the variable religion represents the effect of religious affiliation (Christian=1) on the dependent variable. The coefficient is 0.165952, indicating that being affiliated with Christianity has a positive but insignificant effect on the rural exodus. The positive coefficient may further indicate that for instance, Christian teachings emphasize the importance of education, which causes most of them to migrate to cities for higher education as compared to their Muslim counterparts.

The coefficient for the "Secondary" variable is 0.0471584, suggesting a positive effect on the dependent variable (RE). This means that individuals with a secondary level of education tend to have a slightly higher level of urban migration, though not significant. On the other hand, the coefficient for the "University" variable is -0.3123286, indicating a negative and statistically significant association with the dependent variable. This means that individuals with a university level of education who live in rural areas have a low tendency to migrate to urban areas compared to those with a primary level of education. This is because most of them are workers in rural areas with no motivation to move to urban areas unless on transfer.

The coefficient for the variable marital status represents the effect of marital status (single=1). The coefficient of 0.2174312 suggests that being single has a positive effect on the dependent variable (RE). The associated p-value of 0.011 indicates a significant relationship. This implies that unmarried individuals are more likely to move from Nkambe to Urban areas compared to individuals who are married.

The results indicate that Political Instability has a coefficient of .0608635 and a p-value of 0.072 which is below the predetermined p-value of 0.1 implying a positive and significant on rural exodus. This means that political instability is a major push factor that influenced people to leave Nkambe for the urban areas. Going further I should however note that political instability might not be visibly present in Nkambe Central Subdivision but its presence in neighboring subdivisions could have generated social and economic repercussions that influenced the decision of people to move out of Nkambe Central. Similarly, natural disasters as another independent variable used to determine rural exodus in Nkambe has a positive coefficient (0.1198901), a p-value of 0.004, implying that the occurrence of natural disasters has a significant and positive

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effect on rural exodus. This means that people are more likely to migrate from Nkambe to urban areas if they are affected by the occurrence of natural disasters.

For Educational Facilities, the coefficient of 0.0010813 and a p-value of 0.981 implies that the presence of better educational facilities in urban areas has a positive effect but it is statistically insignificant. This means although educational facilities may matter to some extent, they did not play a significant role as an influencing factor that made people leave Nkambe for urban areas. On the other hand, Job Opportunities with 0.0752794 as the coefficient and a p-value of 0.066 imply a positive and significant relationship. This implies that job opportunities in urban areas are a factor that triggers rural exodus, which influences movements from Nkambe to urban centers. Meanwhile, health facilities have a negative and significant effect on rural exodus in Nkambe, with a coefficient of -.1495415, meaning that health facilities in Nkambe have turned to reduce the level of rural exodus.

Finally, to test for the overall significance, of the model, we used the F-statistics. The F-statistic tests for the overall significance of the independent variables in explaining the dependent variable. In this case, the F statistic has a value of 7.89 and a probability value (Prob>F) of 0.0000, indicating that the regression model as a whole is statistically significant, we therefore reject the null hypothesis. This means that the independent variables collectively significantly impact the dependent variable. The coefficient of determination (R-square) is 0.6068, which means that approximately 60.68% of the variation in the dependent variable can be explained by the independent variables in the model. This means that the independent variables collectively significantly impact the dependent variable. The adjusted R-square (R-Square Adj) is 0.5134, which adjusts for the number of independent variables in the model. It is slightly lower than the R-square, suggesting that some independent variables may not contribute significantly to the model. Looking at the individual independent variables, some are statistically significant at different levels.

Results of the effects of rural exodus on food security

Table 4 Summary of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FS	204	1.583099	.2581912	1	2.4
Marital Status	204	1.54902	.4988154	1	2
Sex	204	1.460784	.499686	1	2
Rural Exodus	204	3.230392	2.63752	1	6
Employment Status	204	1.699507	.4596057	1	2
Religion	204	1.073529	.2616456	1	2
Income Level	204	1.833333	.9784207	1	4
Age	204	3.142157	1.307194	1	5

Source: Author (2024)

Table 4.9 above presents a summary of descriptive statistics for key variables used in the second model to determine the effects of rural exodus on food security in Nkambe. The statistics include the number of observations (Obs), the mean, and standard deviation (Std. Dev.), as well as the minimum and maximum values for each variable. The variable Rural Exodus has a mean value of 2.23, with a minimum value of 1 and a maximum value of 6, indicating that households with the highest level of rural exodus have experienced six members migrating to the city while those with the lowest level of rural exodus have experience only a single individual migrating to the urban area. The standard deviation for this variable is 2.63. The statistical values of

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the other variables do not have any important statistical interpretation, since they are measured on a nominal scale, but their values help us to understand the nature of the variables.

Table 5: Regression Analysis results

FS	Coef.	Std. Err.	t	P>t
Marital status (Married=1)	.1561947	.0609376	2.56	0.012
Sex (Male=1)	.0780315	.0438993	-1.78	0.078
Rural Exodus	.0039368	.0084355	-0.47	0.642
Employment Status	.1222707	.0629012	1.94	0.054
Religion (Muslim=2)	.0729657	.0975331	0.75	0.456
Income Level (Less than 50,000=1)				
50,000-100,000	.0116353	.0598067	-0.19	0.846
100,000-150,000	.0559176	.089923	0.62	0.535
150,0000 above	.1835014	.1015311	1.81	0.073
Age (18-24)				
25-34	.1386936	.1073419	1.29	0.199
35-44	.088013	.1049964	0.84	0.403
45-54	**.1853324**	**.0963664**	**1.92**	**0.057**
Above 55	.0915057	.0850053	1.08	0.284
_cons	1.346416	.1257103	10.71	0.000
Num. of Obs	204			
F(12, 194)	1.95			
Prob>F	0.0004			
R-Square	0.5064			
R-Square Adj	0.4031			

Source: Author (2024)

From 5, the variable of our interest, which is rural exodus, the coefficient of rural exodus suggests that there is no significant association between rural exodus and food security. The coefficient indicates that there is a positive insignificant relationship between rural exodus and food security in Nkambe. From the table, a unit increase in rural exodus will lead to a 0.0039368 increase in food security in Nkambe.

The coefficient of marital status indicates that being married is positively associated with the dependent variable. The positive coefficient (0.1561947) suggests that being married is associated with higher values of

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the dependent variable, holding other variables constant. The p-value of 0.012 indicates that this relationship is statistically significant at a 10% significance level. This means that married individuals have better food security as compared to single. Meanwhile, the coefficient of sex suggests that being male is negatively associated with food security, although the relationship is not statistically significant. This means that males have lower food security as compared to their female counterparts in Nkambe.

The coefficient of employment status suggests a positive association with food security, indicating that those who are employed have a high level of food security compared to those who are unemployed. From the results, a unit increase in the level of employment of an individual household will lead to a 0.122 significant increase in food security of a household. Also, among the different age groups, individuals between the ages group 45 to 54 years have a positive relationship with food security. From the result, an increase in the age of individuals between 45 to 54 years, will lead to a 0.1853 increase in household food security status. Similarly, among the various levels of income, only those with an income level above 150,000CFA have a positive significant effect on household food security. From the results, a unit increase in income from above 150,000CFA will lead to a 0.183 increase in household food security status compared to those with an income level less than 50,000CFA.

The overall significance of the statistics can be understood through the F-test result, which indicates that the overall regression model is significant (Prob>F=0.0004). This suggests that the independent variables included in the model jointly have a significant effect on the dependent variable. Meanwhile, the adjusted R-squared value of 0.4031 indicates that approximately 40% of the variance in the dependent variable can be explained by the independent variables included in the model.

DISCUSSION OF RESULTS

From our first model on the determinants of rural exodus, age was found to be positively related to rural exodus, with a statistically insignificant relationship. This suggested that age did not play a significant role in determining people's decision to migrate from Nkambe to urban areas. This finding is consistent with the research of Makate *et al., (2019)* titled; A micro-econometric analysis of rural-urban migration in Zimbabwe whose results revealed that age did not have a significant impact on migration decision but rather higher levels of education, household income, and marital status (single) were significant factors in rural-urban migration decisions in Zimbabwe.

Political instability was found to have a negative and significant effect on rural exodus. This suggested that political instability was an influence on people's decisions to migrate from Nkambe to urban areas. This means that political instability was a major push factor that influenced people to leave Nkambe for the urban areas. This is in line with the research conducted by Bashir (2011) who investigated the determinants of inter-district rural migration in Pakistan. His results showed that insecurity in rural areas was a significant determinant of inter-district rural migration in Pakistan as people migrated from areas plagued by insecurity to safe sites for peaceful cohabitation and also for them to meet their basic needs.

Furthermore, natural disaster was revealed to have a positive significant effect on rural exodus. For example, a natural disaster such as winds, bushfires, or droughts could have negatively impacted agricultural production which in turn affected the livelihoods of rural residents. As a result, they might be forced to migrate to urban in search of alternative income sources or better living conditions. This could be because, during natural disasters, people were more inclined to their communities to help rebuild and support each other. Although these events could lead to temporary displacement, they merely played a minor role in the decision-making process of individuals considering permanent migration. Lee's push and pull model indicates that the risks associated with natural disasters are minimal and not seen as threatening which could force many people to migrate.

The presence of job opportunities in urban areas was found to have a positive effect on rural exodus. This implied that rural people tend to move to urban areas in search of better job opportunities. Job availability in urban centers provides better earnings, better working conditions, and opportunities for career growth, which are attractive to people seeking to improve their standard of living. These research findings aligned with Maslow's Hierarchy of Needs theory which postulates that human needs can be classified into five levels, with

the basic physiological needs such as food, shelter, and safety being at the bottom. As these basic needs are met, people aspire to fulfill their higher-level needs, such as self-esteem, social belonging, and self-actualization. Therefore, the availability of job opportunities in urban centers can be seen as a way for people to achieve their higher needs in Maslow's Hierarchy of Needs theory. For example, having a stable income provides people with the means to meet their basic needs such as food and shelter, while also providing them with the opportunity to establish social ties and build their self-esteem. Empirically, the finding is in line with Pinyo, (2014) in a study titled Factors Affecting Rural-urban Migration Decisions which used quantitative data from a survey of 500 households from four different provinces in Thailand to analyze the factors influencing rural-urban migration in the availability of job opportunities was pointed out as a major pull factor that influenced rural movement in Thailand. Pinyo (2014) reported that 68% of the household surveyed migrants cited a lack of job prospects in their rural hometowns as one of the primary reasons for migrating to urban areas.

From our second model**,** the result revealed that rural exodus has a positive on food security. Even though people migrated from Nkambe to urban areas, there was no significant change in the availability and accessibility of food resources. This finding is consistent with the study of Adebayo *et al* (2019) who investigated rural-urban migration and food security in Sub-Saharan Africa and found limited associations between rural exodus and food security, they went further to point out that migration can lead to increased income and food access for the rural dwellers as family members who have migrated after having better paid-off jobs in the city send money back home.

CONCLUSION

Based on our findings, it can be concluded that factors such as age, sex, political instability, availability of higher education and social amenities, and marital status impact rural exodus positively. In contrast, religion, level of education, availability of healthcare facilities, and job opportunities negatively impact rural exodus. Above all, rural exodus harms food security in Nkambe, with other factors such as marital status, employment status, age, income level, and religion impacting food security positively. Following these findings, it is recommended that; policymakers should initiate strategies to retain people in rural communities by; providing support and incentives to young people to stay and build their lives in rural areas, providing higher educational facilities, and social amenities in rural areas. This will reduce the rate of young people migrating to urban areas, boosting agricultural productivity, thus, increasing food security in Nkambe.

REFERENCES

1. Abegaz, K. (2017). Determinants of food security: evidence from Ethiopian Rural Household Survey (ERHS) using pooled cross-sectional study. Agriculture and Food Security, Vol.6, No. 70, 1-7.
2. Abegaz, K. (2017). Determinants of food security: evidence from Ethiopian Rural Household Survey (ERHS) using pooled cross-sectional study. Agriculture and Food Security, Vol.6, No. 70, 1-7.
3. Adebayo, E. F., & Adepoju, A. A. (2019). Rural-urban migration and food security in sub-Saharan Africa: a review of empirical evidence. African Population Studies, 33(2), 4654-4664.
4. Ajaero, K.C. and Onokala, C.P. (2013) The effects of rural-urban migration on rural communities of Southeastern Nigeria. International Journal of Population Research, volume 2013, pp 1-10
5. Azizi, S. (2018). The impacts of workers' remittances on human capital and labor supply in developing countries. Economic Modeling, 75, 377–396
6. Balgah , R.A, Kimengsi,J.N.A. A review of diverse environmental nonmigration decisions in Africa. Reg Environ Change 22, 125(2022).
7. Brown, A., Jones, B., & Williams, C. (2020). Infrastructural development and its effect on rural exodus.Journal of Rural Studies, 45, 124-135
8. Chege, P. M., Ndungu, Z. W., & Gitonga, B. M. (2016). Food security and nutritional status of children under five in households affected by HIV and AIDS in Kiandutu informal settlement, Kiambu County, Kenya. Journal of Health, Population and Nutrition, 35, 1-8.
9. Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2017). Household food security in the United States in 2016. United States Department of Agriculture, Economic Research Service, 237.Barrett, Christopher B. "Measuring food insecurity." Science 327.5967 (2010): 825-828.

10. Crush, J., & Caesar, M. (2017). Food remittances: Migration and food security in Africa (No. 72). Southern African Migration Programme. Dagara Women in Ghana. Unpublished MA Thesis, Amsterdam, Free University
11. De Schutter, O., Tubbeh, H., Bicot, S., & Branduardi, L. (2014). Closing the gap between energy and food security: Sustainable agriculture as a solution for Uganda. United Nations Human Rights Council.
12. Ellis, F. (2000). Rural livelihoods and diversity in developing countries. Oxford university press
13. Ellis, F. (2000). Rural livelihoods and diversity in developing countries. Oxford university press
14. Food and Agriculture Organization (2017). The State of Food Security and Nutrition in the World. Food and Agriculture Organization of the United Nations, Rome. Retrieved from http://www.fao.org/publications/en on 29/9/2017. Accessed: June 9, 2023, 5:43 AM
15. Hall, C., Dawson, T. P., Macdiarmid, J. I., Matthews, R. B., & Smith, P. (2017). The impact of population growth and climate change on food security in Africa: looking ahead to 2050. International Journal of Agricultural Sustainability, 15(2), 124-135.
16. Johnson, D., Smith, K., & Brown, L. (2018). Access to social amenities and rural outmigration: A case study in a rural community. Rural Sociological Review, 28(2), 78-92.
17. Kaminski, J (2016) What keeps going people in the countryside? Determinants of rural migration intentions in Poland. Journal of rural studies, 27(4) 443-450
18. Karamba, W. R., Quiñones, E. J., & Winters, P. (2010). Migration and food consumption patterns in Ghana. Food Policy, 36(1), 41–53.
19. Kulindwa, K., & Mugisha, F. (2019). Determinants of rural-to-urban migration in Tanzania: Evidence from the national sample census of agriculture. Journal of Rural Studies, 70, 61-72.
20. Mitra, A., & Chakraborty, C. (2017). Rural-urban dynamics: Internal migration, human development and regional disparities in India. Journal of Rural Studies, 53, 217-230.
21. Mohamed, A. A. (2017). The food security situation in Ethiopia: a review study. International Journal of Health Economics and Policy, 2(3), 86-96
22. Njuh. C.J, Bime .M. J & Tambi. D.M. (2022) Influence of rural-urban migration on food insecurity in Cameroon. Paradigm Academic Press Law and Economy, Vol.I NO.5(ISSN 2788-7049),16-17
23. Olimova S, Kumar K and Baruah N. (2010). Migration and Development in Tajikistan: Emigration, Return and Diaspora. Moscow: International Labour Office (ILO) Sub-regional Office for Eastern Europe and Central Asia
24. Peterson, R., & Johnson, M. (2019). Entrepreneurship and small business development as a rural exodus mitigation strategy. Journal of Rural Entrepreneurship, 15(4), 193-208.
25. Prastiwi, A., Noya, C., & Pudjiatmoko, S. (2019). Rural-urban migration and its implication for food security in Indonesia: a literature review. IOP Conference Series: Earth and Environmental Science, 295, 012014.
26. Radel, C., Schmook, B., & McCandless, S. (2010). Environment, transnational labor migration, and gender: Case studies from southern Yucatán, Mexico and Vermont, USA. Population and Environment, 32(2), 177–197.
27. Shah, T., Molden, D., Sakthivadivel, R., & Seckler, D. (2013). The global groundwater situation: Overview and opportunities. In International Water Management Institute (IWMI) (Vol. 43). Colombo, Sri Lanka.
28. Smith, T., & Johnson, L. (2017). Impact of higher educational facilities on rural exodus. Journal of Rural Education, 32(1), 45-60.
29. Snam, R., & Adhikari, J. (2016). How does Transnational Labour Migration Shape Food Security and Food Sovereignty? Evidence from Nepal. Anthropological Forum, 26(3), 248–261.
30. Tambi, M. D., Atemnkeng, J. T., & Bime, M. J. (2017). Women in agricultural production and food security in rural Cameroon. International Journal of Agricultural Policy and Research, 5(3), 70-79.